REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Rejection of claims 1-9, 11, 19-23, 25, and 26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 6,764,770 (*Paranthaman et al.*) in view of U.S. publication no. 2004/0157747 (*Chen et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 1-3, from which the remaining claims respectively depend. In particular, it is respectfully submitted that the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose each and every recited element of claims 1-3. The remaining claims depend from either claims 1-3, and are therefore patentable as containing all of the recited elements of claims 1-3, as well as for their respective recited features.

By way of review, claims 1-3 variously recite a rare earth oxide superconductor having a metal substrate and at least one intermediate layer comprising cerium and a solid solution formation *element* capable of forming a solid solution with cerium and/or comprising cerium and a charge compensation *element.* As supported by the attached dictionary definition of the word "element," and as would be understood by a person having ordinary skill in the art, an element is a fundamental substance that is formed of atoms of only one kind.

A rare earth oxide superconductive layer is formed on the intermediate layer and has critical temperature (Tc) of 85-88° K.

While the *Paranthaman* patent discloses YBCO layers grown on substrates, by both pulsed laser deposition (PLD) and BF process (col. 5, lines 58-60), the *Paranthaman* patent is silent as to the critical temperature of the YBCO layers.

The *Paranthaman* patent does discuss the critical current density J_c of the YBCO layers at a temperature of 77° K, but fails to indicate what the critical temperature of the YBCO layers is. Even if the temperature of 77° K is considered to be the critical temperature of the YBCO layers, this temperature clearly falls outside the range of the critical temperature (Tc) of 85-88° K recited in claims 1-3.

Turning to the *Chen* publication, high temperature superconductor films on metallic substrates are disclosed, including a HTS (High T_c superconducting) layer (abstract; paragraph [0005]). However, while HTS layers are disclosed, the *Chen* publication is completely silent as to what the critical temperatures T_c of the HTS layers might actually be.

Accordingly, since each of the *Paranthaman* patent and *Chen* publication fail to disclose a rare earth oxide superconductive layer formed on the intermediate layer and having critical temperature (Tc) of 85-88° K, the proposed combination of the *Paranthaman* patent and *Chen* publication fails to disclose this feature of claims 1-3.

Additionally, as acknowledged in the Office action on page 3, the *Paranthaman* patent does not disclose in the intermediate buffer layer cerium paired with either a solid solution formation *element* or a charge compensation *element*.

The Office action turns to the *Chen* publication in an attempt to cure this deficiency of the *Paranthaman* patent.

However, as indicated on pages 3-4 of the Office action, and as discussed in paragraph [0036] and claims 7 and 8 of the *Chen* publication, the buffer layer of the *Chen* publication includes cerium oxide doped with group 2, IIA or 2A metal *oxides*, transition element *oxides*, an lanthanide metal *oxides*, actinide metal *oxides*, or mixtures thereof. As supported by the enclosed dictionary definition of the word "oxide," and as would be understood by a person having ordinary skill in the art, an oxide is a binary compound of oxygen with an *element* or group.

This, in contrast to the embodiments of claims 1-3, the group 2, IIA or 2A metal oxides, transition element oxides, an lanthanide metal oxides, actinide metal oxides, or mixtures thereof, are all *oxides of elements*, and thus, cannot be considered to be a solid solution formation *element* or a charge compensation *element* as is required by claims 1-3.

Thus, even supposing that the teachings of the *Chen* publication are applied to the buffer layer of the *Paranthaman* patent, the proposed combination still fails to disclose in the intermediate buffer layer cerium paired with either a solid solution formation *element* or a charge compensation *element* as is required by claims 1-3.

Additionally, while, as stated on page 7 of the Office action, an oxide of an element does have the element present, an oxide of an element and an element are structurally distinct, and cannot be said to be the same thing. In particular, an oxide of an element and an element have different chemical properties, react differently with other compositions, and are just simply not interchangeable.

Thus, even though the transitional phrase in each of claims 1-3 is "comprising," and even though an oxide of an element contains the element, because an oxide of an element is structurally distinct from an element, the oxide of an element cannot be said to be the same structural feature as an element. Accordingly, since claims 1-3 require the structure of an *element* and not the structure of an oxide of an element, it is respectfully submitted that the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose the recited structure of claims 1-3.

Further, since the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose the recited structure of claims 1-3, the proposed combination of the *Paranthaman* patent and the *Chen* publication cannot inherently disclose the recited critical temperature (Tc) of 85-88° K as required by claims 1-3.

For at least these two reasons, it is respectfully submitted that the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose each and every recited element of claims 1-3. Accordingly, a *prima facie* case of obviousness cannot be established with respect to claims 1-3, and withdrawal of this rejection is respectfully requested.

As mentioned above, applicants submit that independent claims 1-3 are patentable and therefore, claims 4-9, 11, 19-23, 25, and 26, which respectively depend from claims 1-3, are also considered to be patentable as containing all of the elements of respective claims 1-3, as well as for their respective recited features.

2. Rejection of claims 10 and 24 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 6,764,770 (*Paranthaman et al.*) in view of U.S. publication no. 2004/0157747 (*Chen et al.*) and further in view of U.S. patent no. 4,959,348 (*Higashibata et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 10 and 24.

The deficiencies of the *Paranthaman* patent and the *Chen* publication are discussed above in detail with respect to claims 2 and 3, from which claims 10 and 24 respectively depend.

It is respectfully submitted that the *Higashibata* patent fails to provide for the deficiencies of the *Paranthaman* patent and the *Chen* publication. In particular, the *Higashibata* patent fails to disclose a rare earth oxide superconductive layer formed on an intermediate layer and having critical temperature (Tc) of 85-88° K or the intermediate layer cerium paired with either a solid solution formation element or a charge compensation element, both as required by claims 2 and 3.

Accordingly, since the *Higashibata* patent fails to provide for the deficiencies of the *Paranthaman* patent and the *Chen* publication, a *prima facie* case of

obviousness cannot be established with respect to claims 2 and 3, from which claims 10 and 24 respectively depend, and withdrawal of this rejection is respectfully requested.

3. Rejection of claims 12-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. patent no. 6,764,770 (*Paranthaman et al.*) in view of U.S. publication no. 2004/0157747 (*Chen et al.*) and further in view of U.S. patent no. 5,444,040 (*Kojima et al.*)

Reconsideration of this rejection is respectfully requested on the basis that the rejection fails to establish a *prima facie* case of obviousness with respect to claims 12, 14, and 16, from which the remaining claims respectively depend. In particular, it is respectfully submitted that the proposed combination of the *Paranthaman* patent, the *Chen* publication, and the *Kojima* patent fails to disclose each and every recited element of claims 12, 14, and 16. The remaining claims depend from either claim 12, 14, and 16, and are therefore patentable as containing all of the recited elements of claims 12, 14, and 16, as well as for their respective recited features.

Claims 12, 14, and 16 pertain to methods of producing a rare earth oxide superconductor, in the vein of claims 1-3, with particular emphasis on the use of a mixed solution of organometallic acid salts of cerium and an organometallic acid salt of 1 or 2 types of a solid solution formation element or a charge compensation element. In other words, the method includes an MOD method of forming the intermediate layer using a mixed solution of naphthenates. Further, claims 12, 14, and 16 also require the rare earth oxide superconductive layer to be formed by a MOD method onto the intermediate layer.

The deficiencies of both the *Paranthaman* patent and the *Chen* publication are discussed above in detail. In particular, as discussed above, the *Paranthaman* patent fails to disclose a method of forming in the intermediate buffer layer cerium paired with either a solid solution formation element or a charge compensation element.

Additionally, the *Paranthaman* patent, while disclosing the YBCO layer formed by various pulsed laser deposition (PLD) or sputtering processes, fails to disclose forming the YBCO layer by MOD.

Similarly, as previously discussed, the *Chen* publication fails to disclose a method of forming in the intermediate buffer layer cerium paired with either a solid solution formation element or a charge compensation element.

Additionally, while the *Chen* publication discloses the use of MOD to form an intermediate layer (paragraphs [0019], [0040]), the *Chen* publication fails to disclose using the MOD forming method to form the HTS film.

Instead, the *Chen* publication discloses that the HTS film is formed by, for example, pulsed laser deposition (PLD) (paragraphs [0057] and [0060]) or by photo-assisted MOCVD (paragraph [0063]).

Thus, as can be seen from the above discussion, the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose a method of forming in the intermediate buffer layer cerium paired with either a solid solution formation element or a charge compensation element (as discussed above in detail) and forming by an MOD method a rare earth oxide superconductive layer on the intermediate layer, all as required by claims 12, 14, and 16.

The Office action acknowledges on page 6 that the proposed combination of the *Paranthaman* patent and the *Chen* publication fails to disclose a heat treatment (or calcination) step in the range of 900 to 1,200° C.

The Office action turns to the *Kojima* patent as disclosing such a step. However, even if the *Kojima* patent discloses a heat treatment (or calcination) step in the range of 900 to 1,200° C, the *Kojima* patent fails to disclose a method of forming in the intermediate buffer layer cerium paired with either a solid solution formation element or a charge compensation element and forming by an MOD method a rare earth oxide superconductive layer on the intermediate layer, all as required by claims

12, 14, and 16, and thus, fails to cure the deficiencies of the *Paranthaman* patent and the *Chen* publication discussed above.

Therefore, the proposed combination of the *Paranthaman* patent, the *Chen* publication, and the *Kojima* patent fails to disclose each and every recited element of claims 12, 14, and 16, from which claims 13, 15, 17, and 18 respectively depend. Accordingly, a *prima facie* case of obviousness cannot be established with respect to claims 12, 14, and 16, and withdrawal of this rejection is respectfully requested.

As mentioned above, applicants submit that independent claims 12, 14, and 16 are patentable and therefore, claims 13, 15, 17, and 18, which respectively depend from claims 12, 14, and 16, are also considered to be patentable as containing all of the elements of respective claims 12, 14, and 16, as well as for their respective recited features.

4. Conclusion

In view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is respectfully requested that every pending claim in the present application be allowed and the application be passed to issue.

Please charge any additional fees required or credit any overpayments in connection with this paper to Deposit Account No. 02-0200.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicants' attorney, the examiner is invited to contact the undersigned at the numbers shown below.

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